

FIG. 1

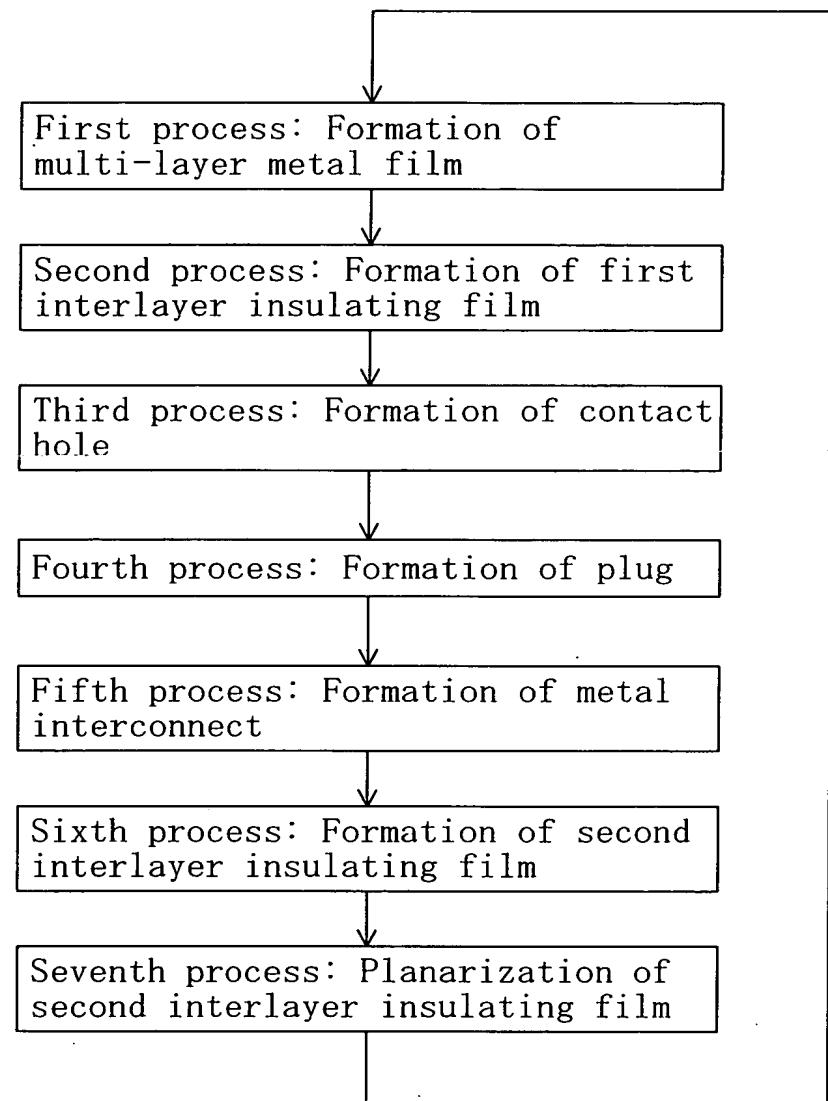


FIG. 2

First process: Formation of
multi-layer metal film

- (1) Formation of first barrier metal layer
- ↓
- (2) Formation of first metal film
- ↓
- (3) Formation of second barrier metal layer
- ↓
- (4) Formation of second metal film
- ↓
- (5) Formation of diffusion preventing film

FIG. 3

Second process: Formation first
interlayer insulating film

- (1) Formation of first interlayer insulating film

FIG. 4

Third process: Formation of contact hole

- (1) Formation of first mask pattern
- ↓
- (2) Etching of first interlayer insulating film
- ↓
- (3) Etching of diffusion preventing film

FIG. 5

Fourth process: Formation of plug

- (1) Formation of adhesive layer on wall of contact hole
 - ↓
 - (1-1) Formation of adhesive layer
 - ↓
 - (1-2) Dry etching
- ↓
- (2) Selective growth of third metal film by plating in contact hole
- ↓
- (3) Formation of plug through CMP of third metal film

FIG. 6

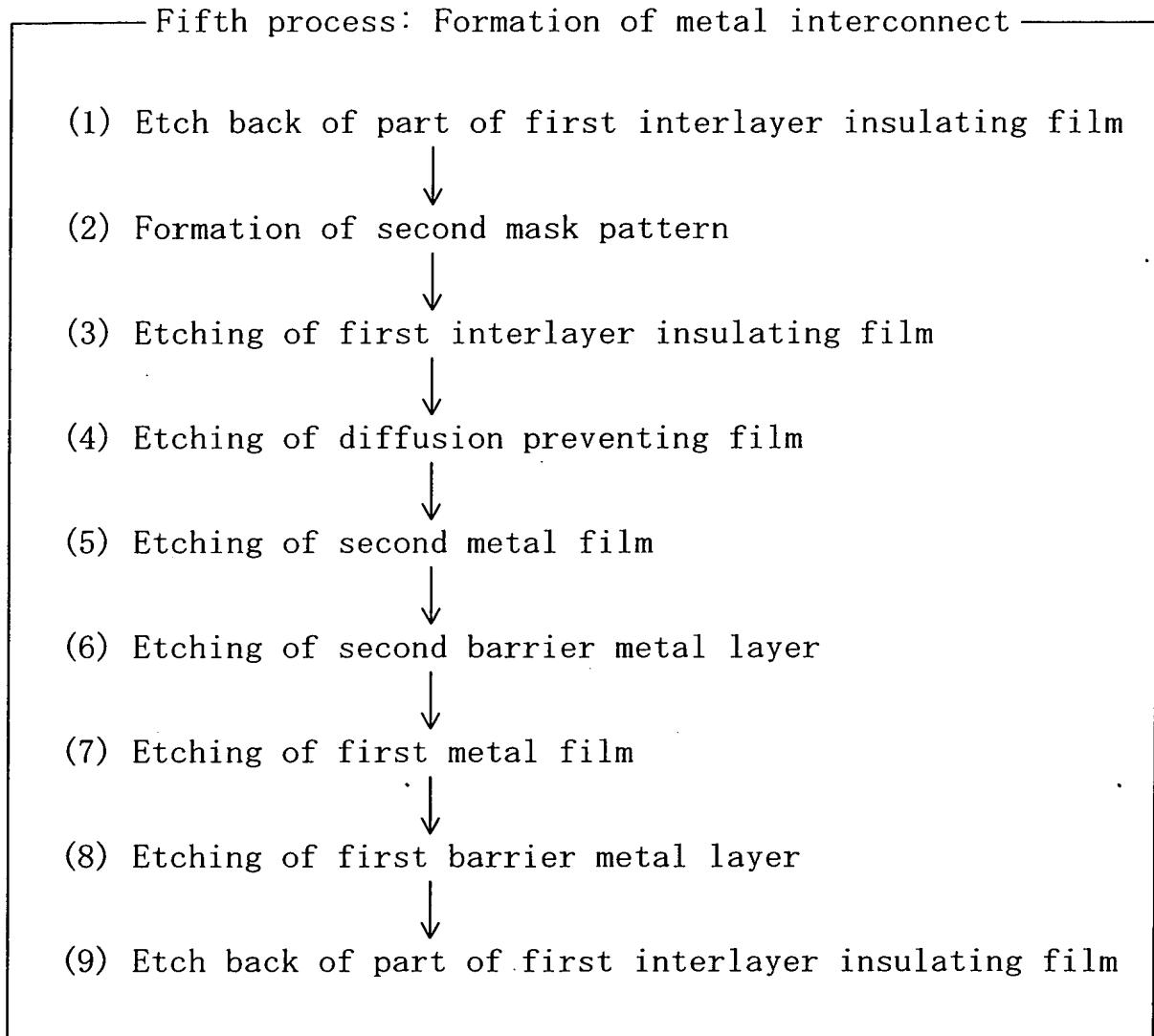


FIG. 7

Sixth process: Formation of second interlayer insulating film

(1) Formation of second interlayer insulating film

FIG. 8

Seventh process: Planarization of second interlayer insulating film

(1) Planarization by CMP

FIG. 9A

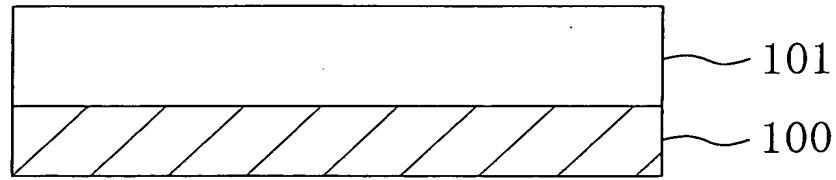


FIG. 9B

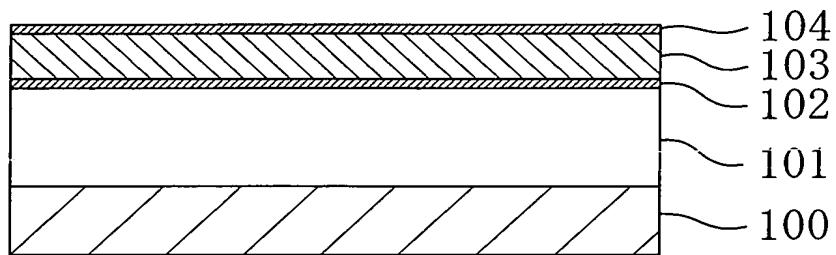


FIG. 9C

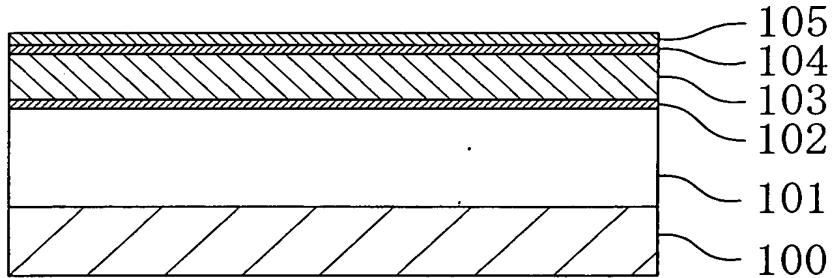


FIG. 9D

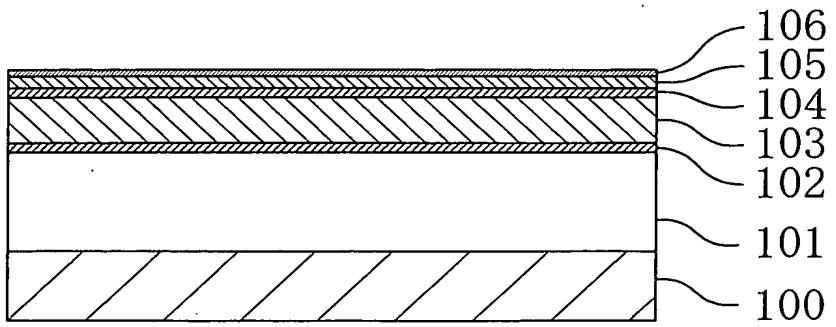


FIG. 10A

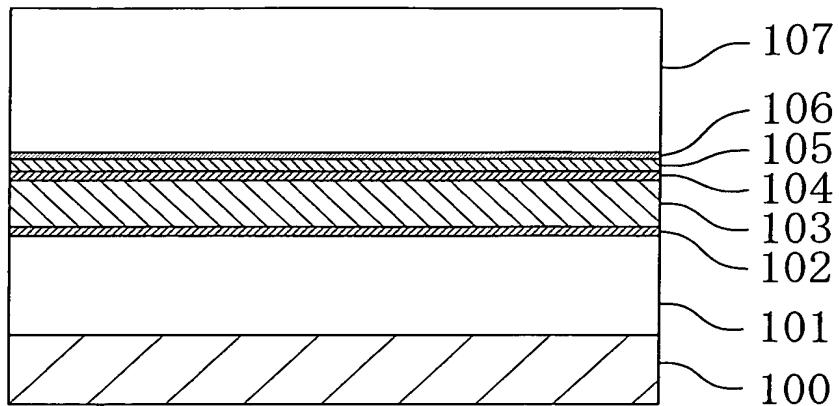


FIG. 10B

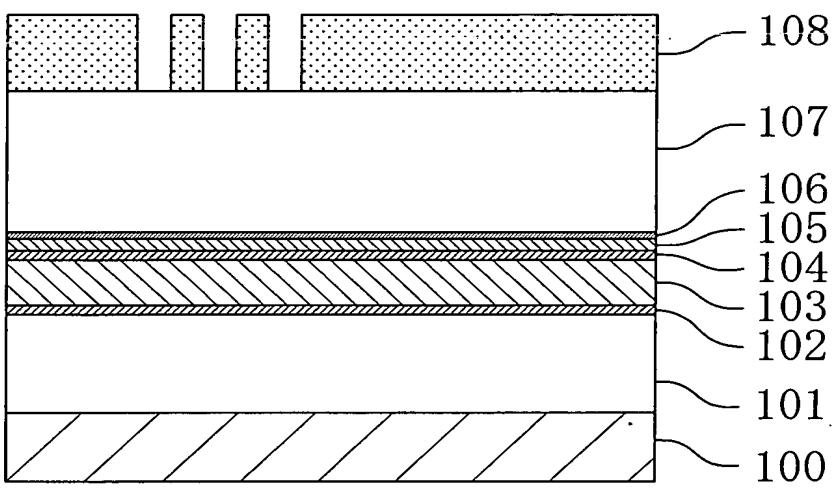


FIG. 10C

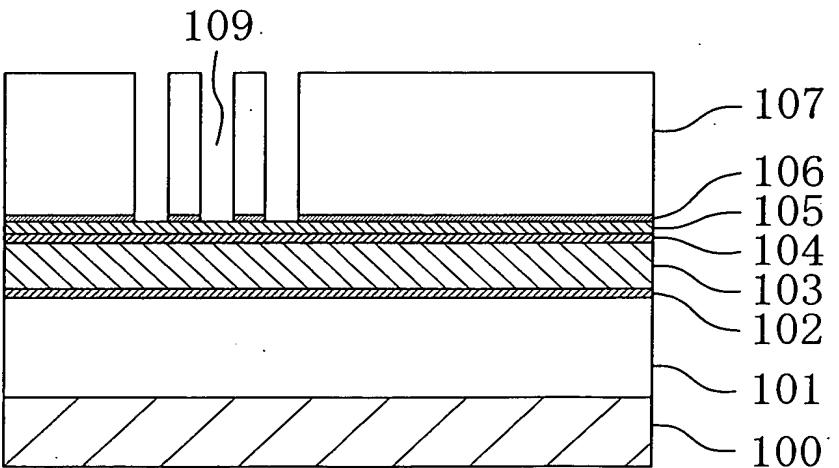


FIG. 11A

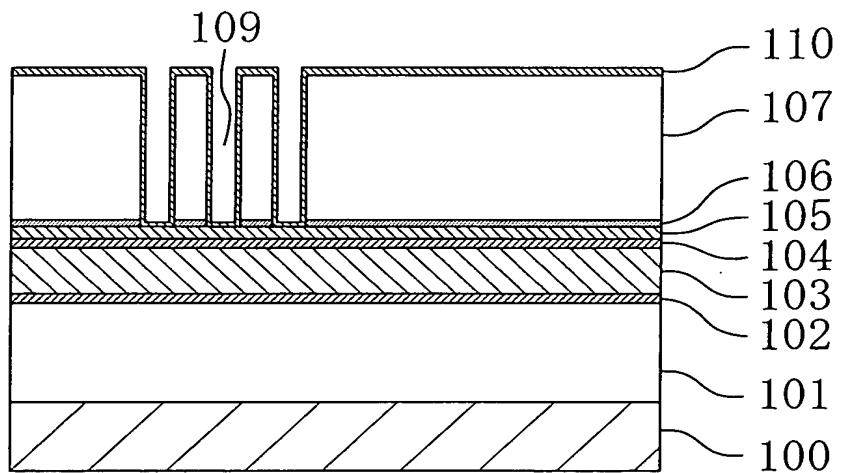


FIG. 11B

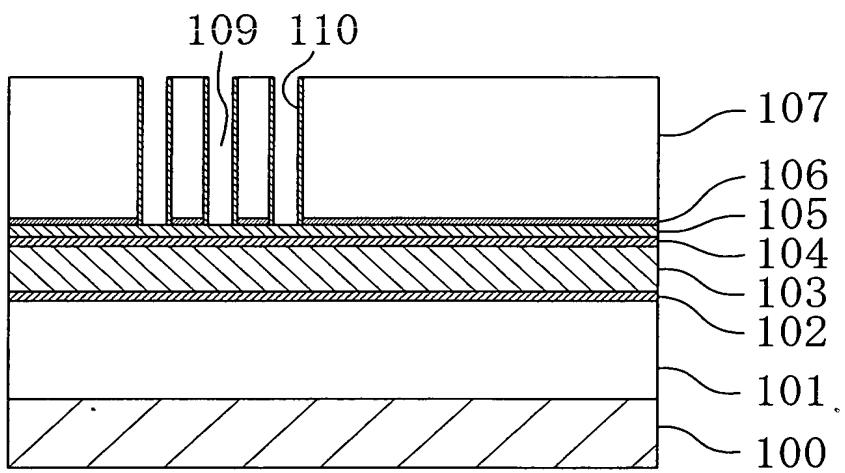


FIG. 11C

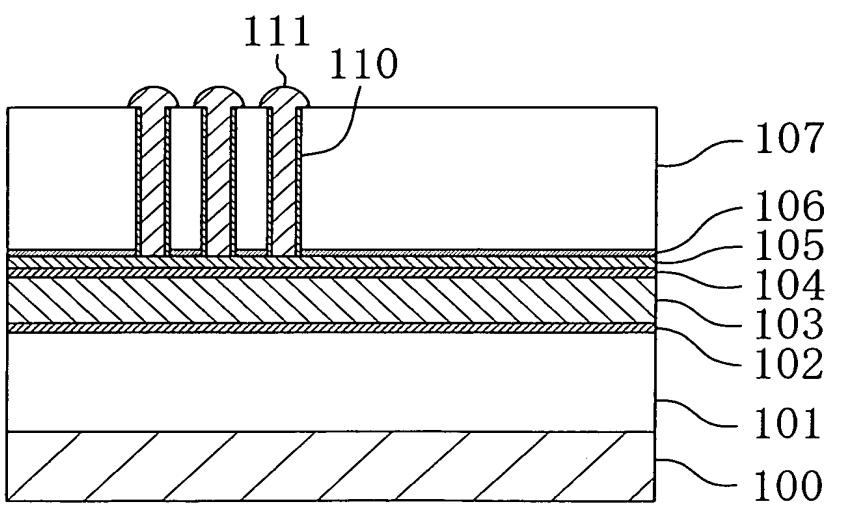


FIG. 12A

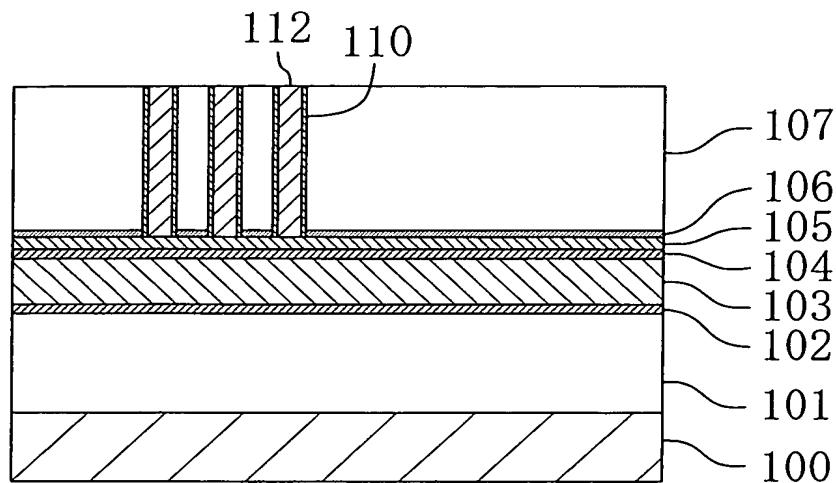


FIG. 12B

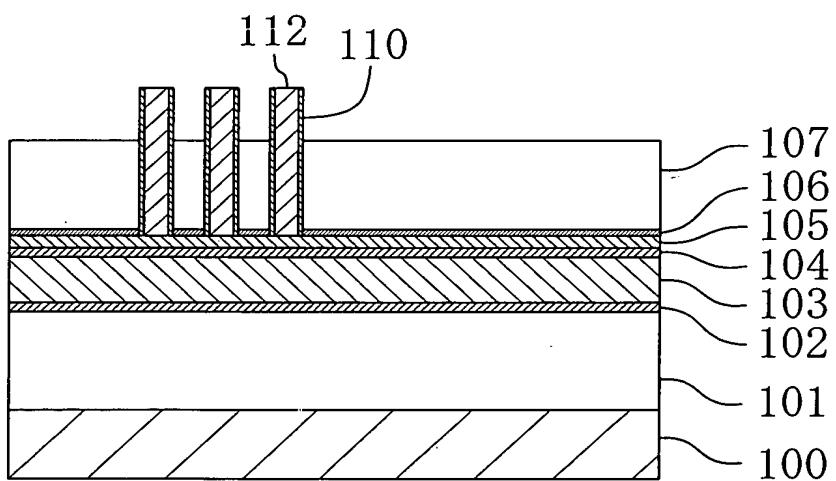


FIG. 12C

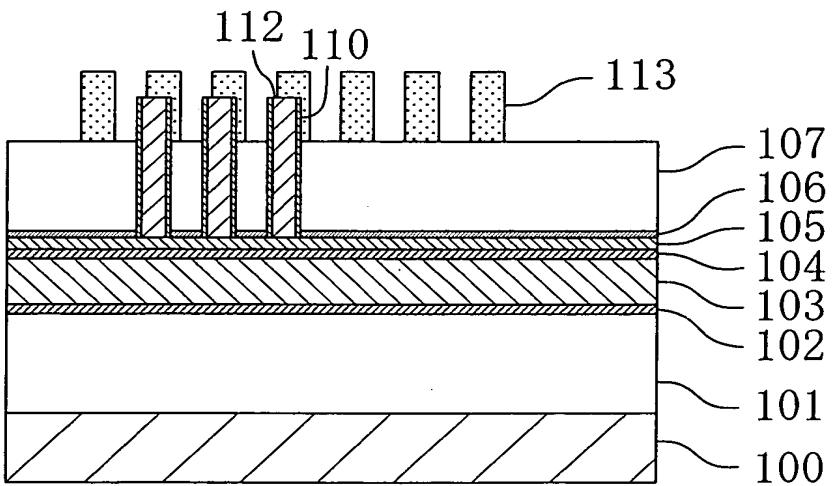


FIG. 13A

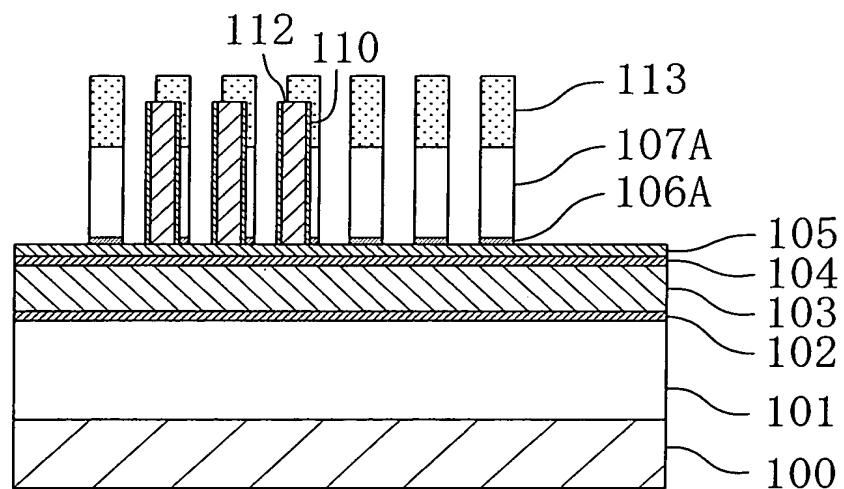


FIG. 13B

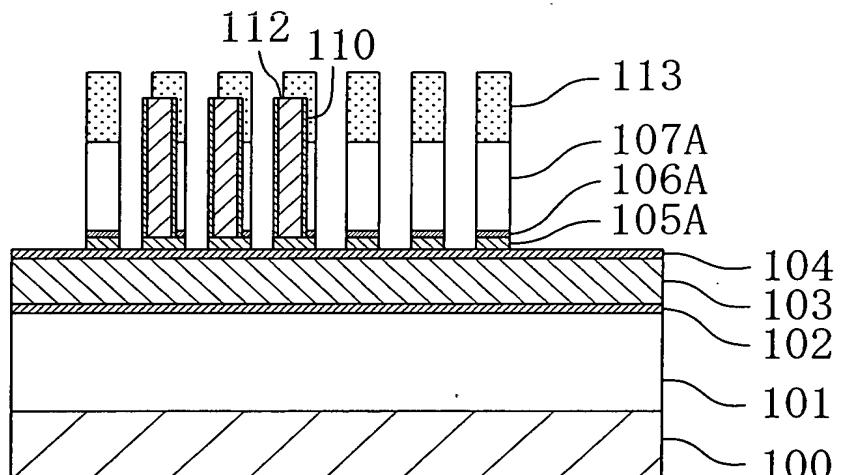


FIG. 13C

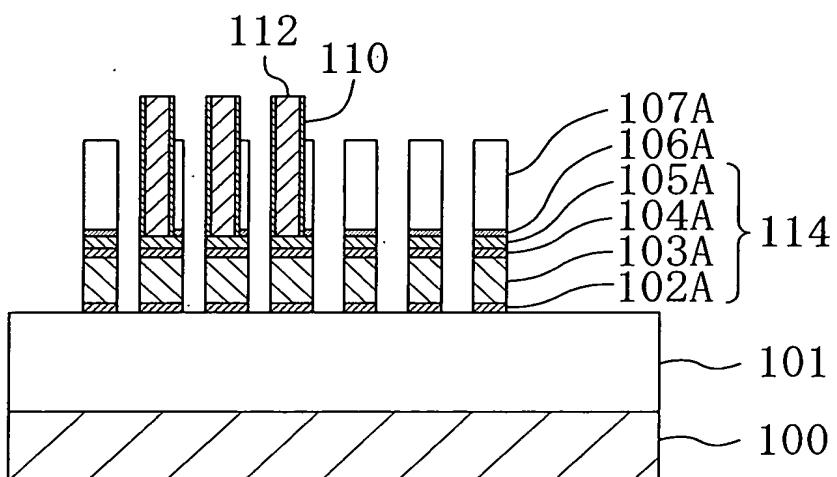


FIG. 14A

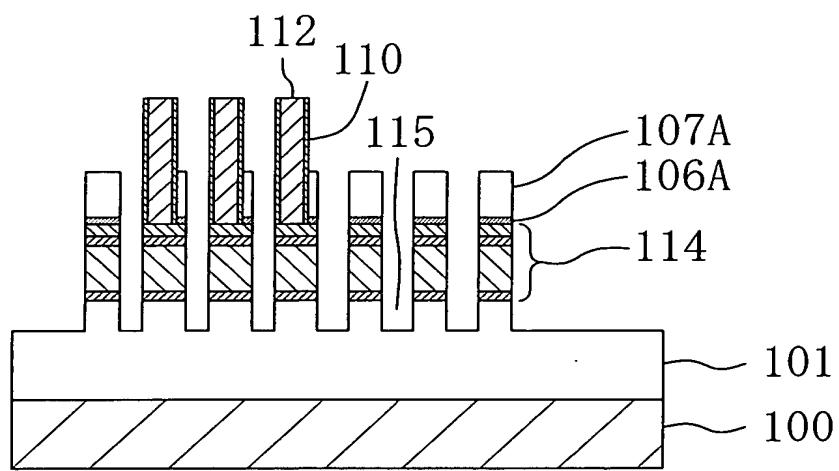


FIG. 14B

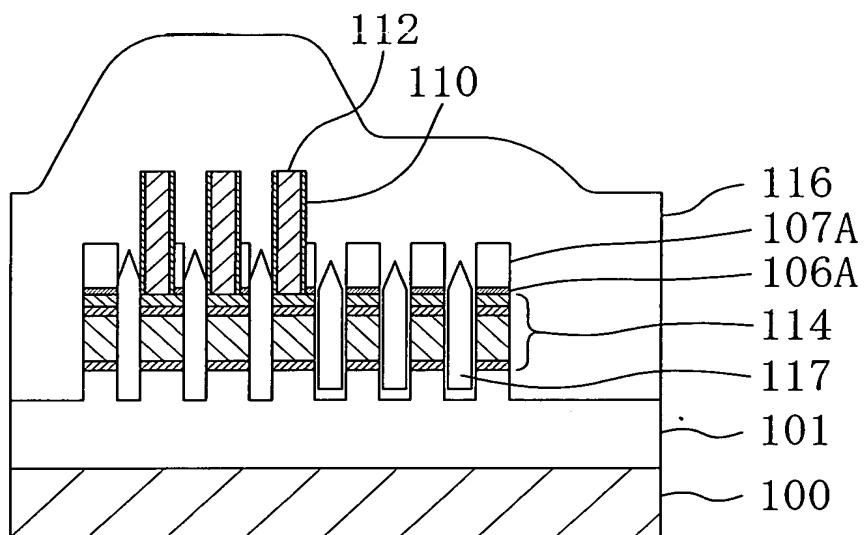


FIG. 14C

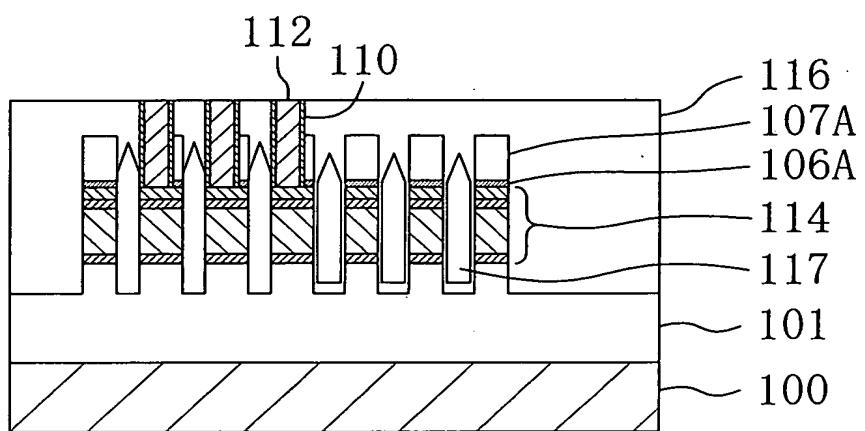


FIG. 15

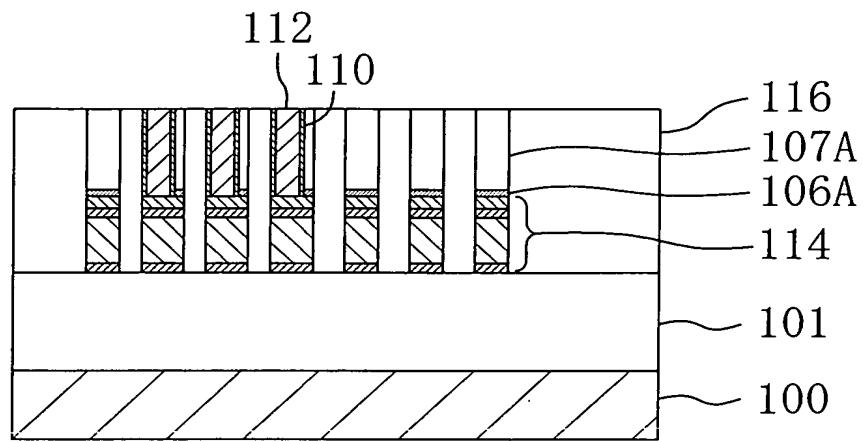


FIG. 16A

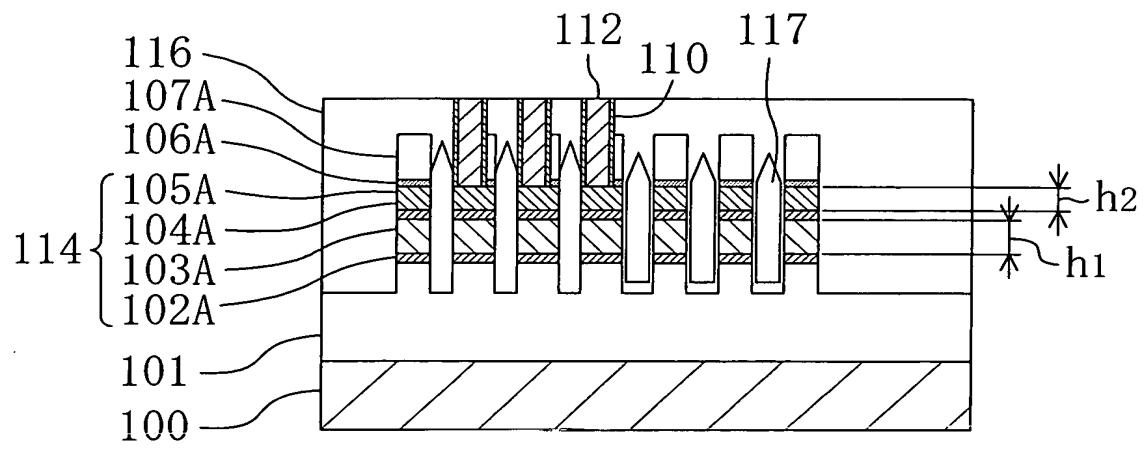


FIG. 16B

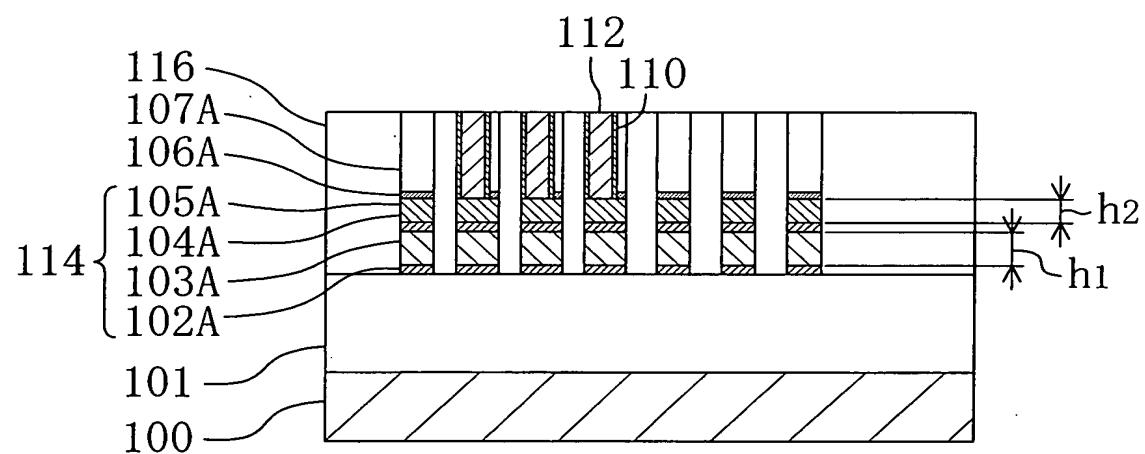


FIG. 17A
PRIOR ART

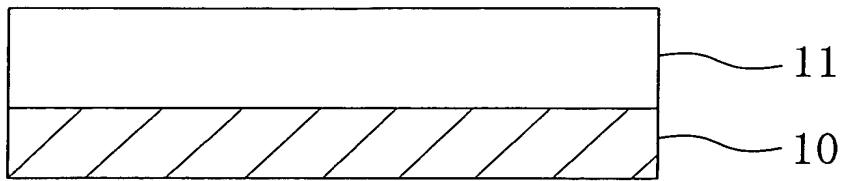


FIG. 17B
PRIOR ART

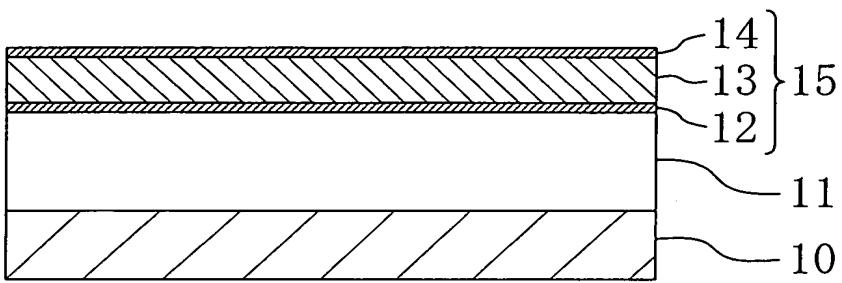


FIG. 17C
PRIOR ART

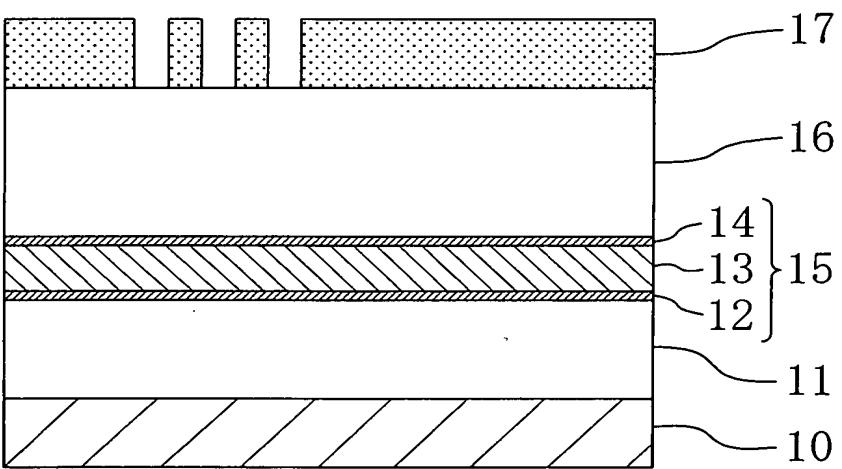


FIG. 17D
PRIOR ART

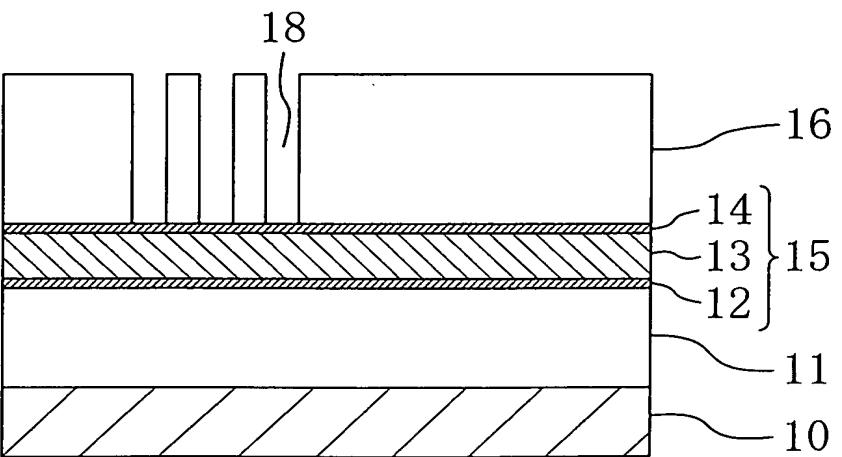


FIG. 18A
PRIOR ART

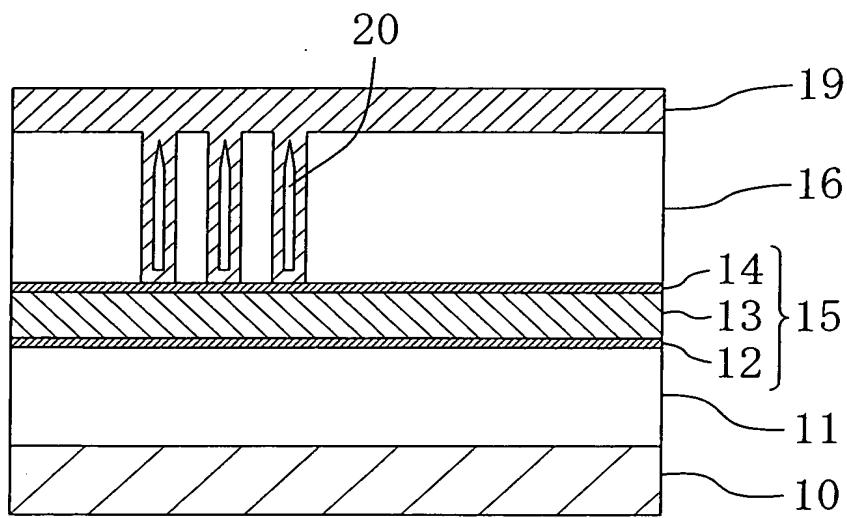


FIG. 18B
PRIOR ART

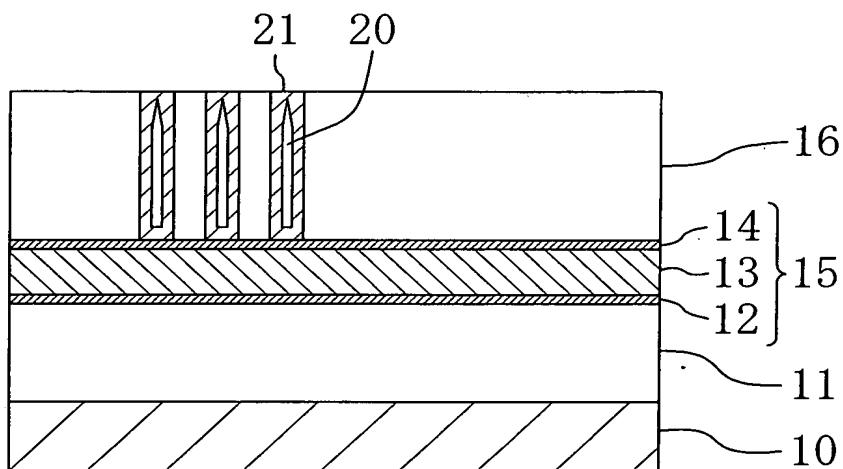


FIG. 18C
PRIOR ART

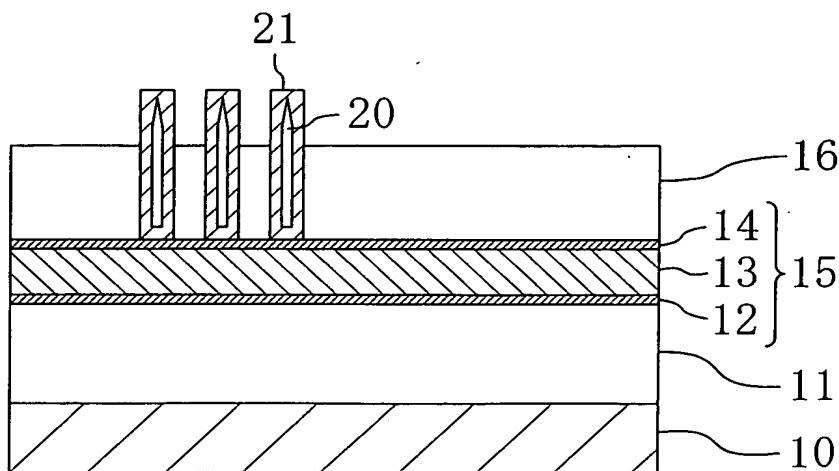


FIG. 19A
PRIOR ART

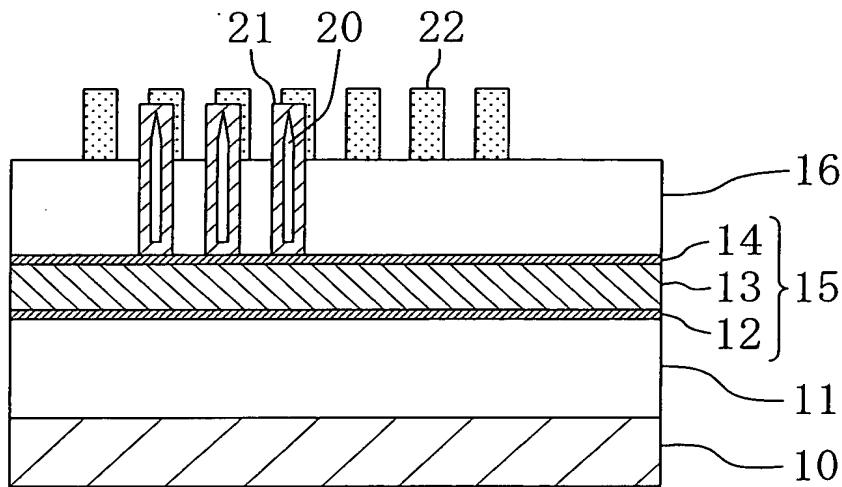


FIG. 19B
PRIOR ART

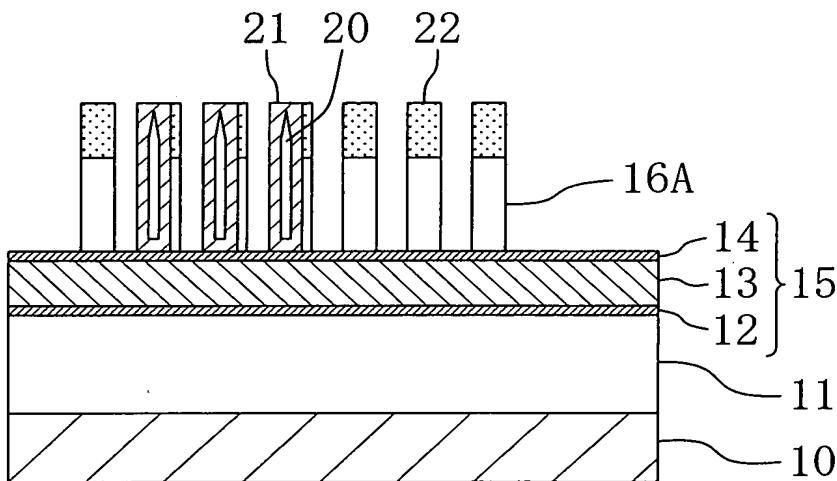


FIG. 19C
PRIOR ART

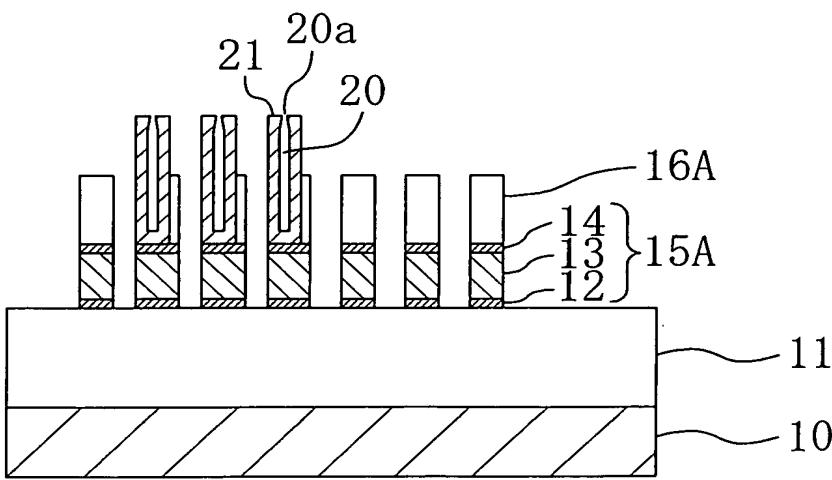


FIG. 20A
PRIOR ART

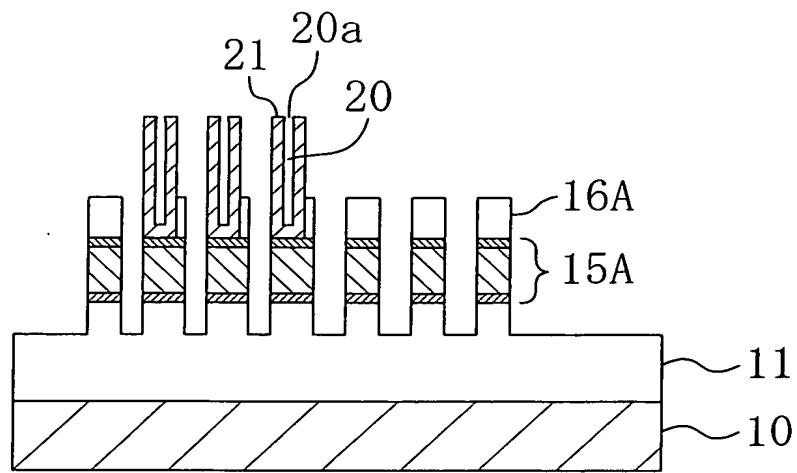


FIG. 20B
PRIOR ART

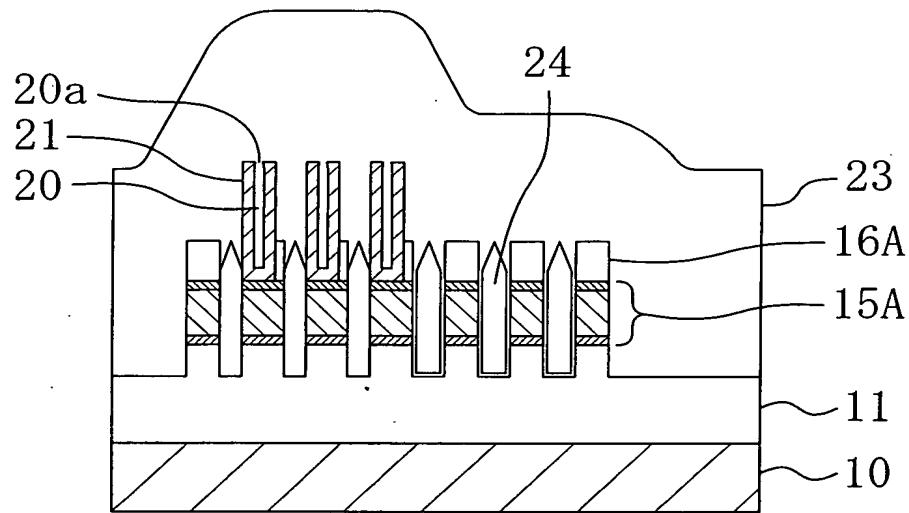


FIG. 20C
PRIOR ART

